

BURIED, FULLY DEPLETABLE, HIGH FILL FACTOR PHOTODIODES

Abstract of the Disclosure

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A semiconductor detector of electromagnetic radiation which utilizes a dual-purpose electrode which extends significantly beyond the edge of a photodiode. This configuration reduces the sensitivity of device performance on small misalignments between manufacturing steps while reducing dark currents, kTC noise, and "ghost" images. The collection-mode potential of the dual-purpose electrode can be adjusted to achieve charge confinement and enhanced collection efficiency, reducing or eliminating the need for an additional pinning layer. Finally, the present invention enhances the fill factor of the photodiode by shielding the photon-created charge carriers formed in the substrate from the potential wells of the surrounding circuitry.

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